IN THE CLAIMS

WE CLAIM:

1. A control device, comprising:

a component having a magnetic portion, said magnetic portion having symmetry about an axially disposed hole, said magnetic portion further having a shape effective to provide a desired transfer function and a construction effective to minimize magnetic flux distortion, cross talk and hysteresis;

a shaft extending into said hole;

at least one non-magnetic bushing supporting said component; and

at least one magnetic sensor disposed adjacent to said magnetic portion.

2. The control device of claim 1 wherein said magnetic portion is comprised of a uniform mixture of magnetic powders dispersed in a polymeric matrix.

3. The control device of claim 2 wherein said magnetic powders are a mixture of neodymium and ferrite.

4. The control device of claim 2 wherein said magnetic portion has uniformly convex walls terminating at opposing planar polar portions.

5. The control device of claim 4 wherein opposing ones of said planar polar portions are separated by a distance effective to provide said control device with a desired angle of rotation.

6. The control device of claim 3 wherein said magnetic portion has walls with first and second convex portions adjacent to respective north and south poles and a concave portion disposed between said first and second convex portions.

7. The control device of claim 6 wherein said magnetic portion is coated with a low coefficient of friction polymer.

8. A control device, comprising:

a component having a magnetic portion, said magnetic portion having symmetry about an axially disposed hole, said magnetic portion further having a shape effective to provide a desired transfer function and a construction effective to minimize magnetic flux distortion, cross talk and hysteresis;

a hollow shaft having first and second opposing ends and extending through said hole;

a handle disposed at said first end of said hollow shaft;

a first magnet disposed within said hollow shaft in displacement from said component;

at least one first magnetic sensor disposed adjacent to said magnetic portion; and

at least one second magnetic sensor mounted to said hollow shaft in apposition to said first magnet.

9. The control device of claim 8 wherein said first magnet has north and south poles disposed along sidewalls thereof.

10. The control device of claim 9 wherein said first and said second magnetic sensors are Hall effect sensors.

11. The control device of claim 9 wherein a second magnet is disposed within said hollow shaft in displacement relative to both said component and said first magnet and at least one third magnetic sensor is mounted to said shaft in apposition to said second magnet.

12. The control device of claim 11 wherein said second magnet has north and south poles disposed along an axis running parallel to the longitudinal axis of said hollow shaft and said third magnetic sensor is selected from the group consisting of digital Hall effect switches and linear Hall effect sensors.

13. The control device of claim 12 further including an extension portion engaging both said handle and said second magnet whereby vertical displacement of said handle relative to said hollow shaft results in displacement of said second magnet.

14. The control device of claim 13 wherein said magnetic portion of said component is comprised of a uniform mixture of magnetic powders dispersed in a polymeric matrix.

15. The control device of claim 14 wherein said magnetic portion has uniformly convex walls terminating at opposing planar polar portions.

16. The control device of claim 15 wherein opposing ones of said planar polar portions are separated by a distance effective to provide said control device with a desired angle of rotation.

17. The control device of claim 16 wherein said magnetic portion is coated with a low coefficient of friction polymer.

18. The control device of claim 14 wherein said magnetic portion has walls with first and second convex portions adjacent to respective north and south poles and a concave portion disposed between said first and second convex portions.

19. A magnetic component, comprising:

a spheroidal magnet having a shape effective to provide a desired transfer function and a construction effective to minimize magnetic flux distortion, cross talk and hysteresis formed from a uniform mixture of magnetic powders dispersed in a polymeric matrix.

20. The magnetic component of claim 19 wherein said magnet is coated with a low coefficient of friction polymer.